AMENDMENTS TO THE CLAIMS

This listing of the claims replaces all prior versions, and listings of the claims in the application:

1. (Currently Amended) A system adapted to analyze a concentration of a selected gas in a gas sample, the system comprising:

(a) a gas analyzer comprising:

(1) a gas analyzer housing,

(2) a receptacle defined in the gas analyzer housing,

(3) a source disposed in the gas analyzer housing and adapted to emit radiation of a specified intensity and wavelength along an optical path such that the radiation is absorbed by the selected gas in the gas sample being analyzed~~;~~, and

(4) an infrared radiation detector disposed in the gas analyzer housing along the optical path in optical communication with the source and adapted to detect an intensity of the emitted radiation by the source after the radiation has passed through the gas sample; and

(b) a sample cell adapted to be disposed between the source and infrared radiation detector, wherein the sample cell includes:

(1) a sample cell housing adapted to be selectively disposed in the receptacle,

(2) a gas inlet disposed at a first end portion of the sample cell housing and on a first side of the sample cell,

(3) a gas outlet disposed at a second end portion of the ~~sample cell~~housing generally opposite the first end portion and on a second side of the sample cell generally opposite the first side of the sample cell, and

(4) a gas flow passage defined in the sample cell through at least a portion of the sample cell housing between the gas inlet and the gas outlet, wherein the gas flow passage is generally parallel to the optical path between the source and the detector such

that the gas flow passage defines a sample chamber, wherein a length of the gas flow passage defining the sample chamber is greater than a width of the gas flow passage, and wherein the gas inlet, the gas outlet, and the gas flow passage are disposed in a "Z" configuration in which at least one angle in the "Z" configuration through which gas passes is less than 90°, and wherein at least a portion of a wall defining the gas flow passage includes an infrared reflective surface so as to direct rays of radiation from the source to the infrared radiation detector generally along the optical path.

2. (Previously Presented) The system of claim 1, wherein the infrared reflective surface is selected from group consisting of aluminum and gold.

3. (Previously Presented) The system of claim 1, wherein the infrared reflective surface comprises a high index material.

Claims 4 and 5. (Cancelled).

6. (Currently Amended) A system for analyzing the concentration of a selected gas in a gas sample, comprising:

(a) a gas analyzer comprising:

(1) a gas analyzer housing,

(2) a receptacle defined in the gas analyzer housing,

(3) a source disposed in the gas analyzer housing and adapted to emit radiation of a specified intensity and wavelength such that the radiation is absorbed by the selected gas in the gas sample being analyzed;,

(4) a high numerical aperture -lens disposed in the gas analyzer housing so as to receive radiation from the source and direct the emitted rays in a manner to be substantially parallel to each other;, and

(5) an infrared radiation detector disposed in the gas analyzer housing in optical communication with the emitter and adapted to detect an intensity of the emitted radiation by the source after the radiation has passed through the gas sample; and

(b) a sample cell disposed between the source and the infrared radiation detector, wherein the sample cell includes:

(1) a sample cell housing adapted to be selectively disposed in the receptacle,

(2) a gas inlet disposed at a first end portion of the sample cell housing,

(3) a gas outlet disposed at a second end portion of the sample cell housing, ~~wherein~~ and

(4) a gas flow passage is defined in the sample cell through at least a portion of the sample cell housing between the gas inlet and the gas outlet, wherein the gas flow passage is generally parallel to an optical path between the source and the detector such that the gas flow passage defines a sample chamber, wherein the gas inlet, the gas outlet, ~~and~~ wherein the gas flow passage ~~are~~ is disposed in a "Z" configuration in which at least one angle in the "Z" configuration through which gas passes is less than 90°, and wherein a length of the gas flow passage defining the sample chamber is greater than a width of the gas flow passage.

Claim 7-9. (Cancelled).

10. (Currently Amended) A method of analyzing a concentration of a selected gas in a gas sample comprising:

providing a gas analyzer comprising:

(a) a gas analyzer comprising:

(1) a gas analyzer housing,

(2) a receptacle defined in the gas analyzer housing,

(3) a source disposed in the gas analyzer housing and adapted to emit radiation of a specified intensity and wavelength along an optical path such that the radiation is absorbed by the selected gas in the gas sample being analyzed, and

(4) an infrared radiation detector disposed in the gas analyzer housing along the optical path in optical communication with the source and adapted to detect an intensity of the emitted radiation by the source after the radiation has passed through the gas sample; and

(b) a sample cell adapted to be disposed between in the receptacle between the source and infrared radiation detector, ~~wherein the sample cell includes~~comprising:

(1) a sample cell housing

(2) a gas inlet disposed at a first end portion of the sample cell housing,

(3) a gas outlet disposed at a second end portion of the sample cell housing, and

(4) a gas flow passage defined in the sample cell through the sample cell housing between the gas inlet and the gas outlet, wherein the gas flow passage is generally parallel to the optical path between the source and the detector such that the gas flow passage defines a sample chamber, wherein a length of the gas flow passage defining the sample chamber is greater than a width of the gas flow passage, wherein the gas inlet, the gas outlet, and the gas flow passage are disposed in a "Z" configuration in which at least one angle in the "Z" configuration through which gas passes is less than 90°, and wherein at least a portion of a wall defining the gas flow passage includes an infrared reflective surface so as to direct rays of radiation from the source to the infrared radiation detector generally along the optical path;

(c) emitting infrared radiation of a specified intensity and wavelength from a source through the aperture along the optical path through the sample chamber;

(d) absorbing a portion of the radiation by the selected gas in the sample chamber; and

(e) detecting an intensity of the radiation by an infrared radiation detector disposed along the optical path in optical communication with the source after the radiation has passed through the gas sample in the sample chamber.

Claim 11. (Cancelled).

12. (Currently Amended) A method of analyzing a concentration of a selected gas in a gas sample comprising:

providing a gas analyzer comprising:

(a) a gas analyzer comprising:

(1) a gas analyzer housing,

(2) a receptacle defined in the gas analyzer housing,

(3) a source disposed in the gas analyzer housing and adapted to emit radiation of a specified intensity and wavelength along an optical path such that the radiation is absorbed by the selected gas in the gas sample being analyzed, and

(4) an infrared radiation detector disposed in the gas analyzer housing along the optical path in optical communication with the source and adapted to detect an intensity of the emitted radiation by the source after the radiation has passed through the gas sample; and

(b) a sample cell adapted to be disposed in the receptacle between the source and infrared radiation detector, ~~wherein the sample cell includes~~comprising:

(1) a sample cell housing

(2) a gas inlet disposed at a first end portion of the sample cell housing,

(3) a gas outlet disposed at a second end portion of the sample cell housing, and

(4) a gas flow passage defined in the sample cell through the sample cell housing between the gas inlet and the gas outlet, wherein the gas flow passage is generally parallel to the optical path between the source and the detector such that the gas

flow passage defines a sample chamber, wherein a length of the gas flow passage defining the sample chamber is greater than a width of the gas flow passage, ~~wherein the gas inlet, the gas outlet, and the gas flow passage are disposed in a Z configuration,~~ wherein the gas inlet, the gas outlet, and the gas flow passage are disposed in a "Z" configuration in which at least one angle in the "Z" configuration through which gas passes is less than 90°, and wherein at least a portion of a wall defining the gas flow passage includes an infrared reflective surface so as to direct rays of radiation from the source to the infrared radiation detector generally along the optical;

emitting infrared radiation of a specified intensity and wavelength from a source through the aperture along an optical path through the sample chamber;

providing a high numerical aperture lens disposed along the optical path so as to receive radiation from the source;

passing the radiation through the high numerical aperture lens;

passing the radiation through a gas sample in the sample chamber after having passed through the high numerical aperture lens;

absorbing a portion of the radiation by the selected gas such a gas sample; and

detecting an intensity of the radiation by an infrared radiation detector disposed along the optical path in optical communication with the source after the radiation has passed through the gas sample in the sample chamber.

13. (Previously Presented) The system of claim 1, further comprising a high numerical aperture lens disposed so as to receive radiation from the emitter and direct the emitted rays in a manner to be substantially parallel to each other.

14. (Previously Presented) The system of claim 13, wherein the high numerical aperture lens is a half-ball lens or a ball lens.

15. (Previously Presented) The system of claim 6, wherein the high numerical aperture lens is a half-ball lens or a ball lens.

16. (Previously Presented) The method of claim 10, further comprising providing a high numerical aperture lens disposed so as to receive radiation from the emitter, and wherein emitting infrared radiation along the optical path includes passing the emitted rays through the high numerical aperture lens.